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Building & Highway Material Testing Laboratory

An ISO 9001:2015 Certified Company

NABL - Accredited Laboratory as per ISO / IEC-17025 : 2017

Job No.: CTCE/BBMP/MESPL/W.No.14/WMM/Gradation/2020-21

24.08.2020

TEST REPORT ON GRADATION OF WET MIX MACADAM

* Customer	:	**Asst. Executive Engineer,** T.Dasarahalli Sub Division, BBMP, Bangalore.
* Agency	:	**M/s. Maxp Energy Solutions Pvt.Ltd.,** #743, 80 Feet Main Road, BSK 3rd Stage, Bangalore.
* Name of Work	:	Reserve fund for Emergency works in Bagalagunte Ward No.14, BBMP, Bangalore.
* Reference	:	EE/DD/W.O/86/2020-21 Dated : 19.08.2020
Sample ID	:	Wet Mix Macadam
Test Method as per	:	IS - 2386 (part-1) : 1963 (RA-2016)
Date of Testing	:	24.08.2020
Report Issue Date	:	24.08.2020

Oven Dry Wt (gm): **5000**

Is Sieve Size in mm	Weight Retained (gm)	Cumulative Weight Retained (gm)	Cumulative % of Retained	Cumulative % of Passing	Spec.Limits As per Morth Table 400-13
53	0	0	0	100	100
45	80	80	1.6	98.4	95-100
22.4	1295	1375	27.50	72.50	60-80
11.2	1330	2705	54.10	45.90	40-60
4.75	625	3330	66.60	33.40	25-40
2.36	685	4015	80.30	19.70	15-30
0.600	400	4415	88.30	11.70	8-22
0.075	328	4743	94.86	5.14	0-8

*Information is furnished by the Customer/Representative.

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ಟಿ. ದಾಸರಹಳ್ಳಿ ಉಪ ವಿಭಾಗ
ಬಾಗಲಗುಂಟೆ, ಬಿ.ಬಿ.ಎಂ.ಪಿ.
ಬೆಂಗಳೂರು-560073

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JJob No.: CTCE/BBMP/MESPL/W.No.14/WMM/AIV/2020-21 24.08.2020

TEST REPORT ON IMPACT VALUE OF AGGREGATE

* Customer	:	**Asst. Executive Engineer,** T.Dasarahalli Sub Division, BBMP, Bangalore.
* Agency	:	**M/s.Maxp Energy Solutions Pvt.Ltd.,** #743, 80 Feet Main Road, BSK 3rd Stage, Banaglore.
* Name of Work	:	Reserve fund for Emergency works in Bagalagunte Ward No.14, BBMP, Bangalore.
* Reference	:	EE/DD/W.O/86/2020-21 Dated : 19.08.2020
* Sample ID	:	Wet Mix Macadam
Test Method as per	:	IS - 2386(Part -4) : 1963 (RA-2016)
Date of Testing	:	24.08.2020
Report Issue Date	:	24.08.2020

Sl No.	Details	Trial No. 1	Trial No. 2	Average
1	Total weight of aggregate sample filling the cylindrical measure = W_1 g	385	387	
2	Weight of agregate passing 2.36 mm sieve after the test = W_2 g	83	84	
3	Weight of aggregate retained 2.36 mm sieve after the test = W_3 g	302	303	
4	Aggregate Impact value = percent fines 100* (W2/W1)%	21.56	21.71	21.63

*Information is furnished by the Customer/Representative.

Comments:

→ Maximum allowable Aggregate Impact value for Wet Mix Macadam is 30%

Note:

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Job No.: CTCE/BBMP/MESPL/W.No.14/WMM/Shape.T/2020-21 24.08.2020

TEST REPORT ON FLAKINESS INDEX & ELONGATION INDEX OF COARSE AGGREGATES

* Customer	:	**Asst. Executive Engineer,** T.Dasarahalli Sub Division, BBMP, Bangalore.
* Agency	:	**M/s.Maxp Energy Solutions Pvt.Ltd.,** #743, 80 Feet Main Road, BSK 3rd Stage, Bangalore.
* Name of Work	:	Reserve fund for Emergency works in Bagalagunte Ward No.14, BBMP, Bangalore.
* Reference	:	EE/DD/W.O/86/2020-21 Dated : 19.08.2020
* Sample ID	:	Wet Mix Macadam
Test Method as per	:	IS - 2386(Part 1) : 1963 (RA 2016)
Date of Testing	:	24.08.2020
Report Issue Date	:	24.08.2020

Sl.No.	Description	Result
1	Flakiness Index	12.15%
2	Elongation Index	13.60%
3	Combined Flakiness & Elongation Index	25.75%

*Information is furnished by the Customer/Representative.

Comments:

→ Maximum allowable Flakiness & Elongation Index for Wet Mix Macadam is 30%

Note:

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Job No.: CTCE/BBMP/MESPL/W.No.14/CSR-196a/QB(BC)/2020-21 26.08.2020

TEST REPORT ON DETERMINATION OF BITUMEN CHARACTERISTICS

* Customer	:	**Asst. Executive Engineer,** T.Dasarahalli Sub Division, BBMP, Bangalore.
* Agency	:	**M/s. Maxp Energy Solutions Pvt. Ltd.,** #743, 80 Feet Main Road, BSK 3rd Stage, Bangalore.
* Name of work	:	Reserve fund for Emergency works in Bagalagunte Ward No.14, BBMP, Bangalore.
* Reference	:	EE/DD/W.O/86/2020-21 Dated : 19.08.2020
* Sample ID	:	Bitumen
Source/ Location	:	Hot Mix Plant, Bangalore.
Sample Received on	:	24.08.2020
Period of Testing	:	24.08.2020 to 26.08.2020
Report Issue Date	:	26.08.2020

The results of the tests conducted on the bitumen sample are as follows:

Sl. No	Description	Test Method as per IS	Test Result	Requirement as per IS:73:2013 (RA-2018) for VG 30
1	Penetration at 25 ^{0}C, 1/10 mm	IS :1203 -1978 (RA-2019)	51	Min. 45
2	Softening point (R & B), ^{0}C	IS :1205 -1978 (RA-2019)	54	Min. 47
3	Ductility at 27^{0}C, cm	IS :1208 -1978 (RA-2019)	100	Min. 40
4	Flash Point, ^{0}C	IS :1209 -1978 (RA-2019)	296	Min. 220

* Information is furnished by the Customer/Representative

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Job No.: CTCE/BBMP/MESPL/W.No.14/AIV/2020-21

26.08.2020

TEST REPORT ON IMPACT VALUE OF AGGREGATES

* Customer	:	**Asst. Executive Engineer,** T.Dasarahalli Sub Division, BBMP, Bangalore.
* Agency	:	**M/s. Maxp Energy Solutions Pvt. Ltd.,** #743, 80 Feet Main Road, BSK 3rd Stage, Bangalore.
* Name of Work	:	Reserve fund for Emergency works in Bagalagunte Ward No.14, BBMP, Bangalore.
* Reference	:	EE/DD/W.O/86/2020-21 Dated : 19.08.2020
* Sample ID	:	Hot mix plant, Bangalore.
* Type of Mix	:	Bituminous Concrete
Test Method as per	:	IS - 2386 (Part- 4) : 1963 (RA-2016)
Date of Testing	:	26.08.2020
Report Issue Date	:	26.08.2020

Sl No.	Details	Trial No.		Average
		1	2	
1	Total weight of aggregate sample filling the cylindrical measure = W_1 g	389	392	
2	Weight of agregate passing 2.36 mm sieve after the test = W_2 g	87	88	
3	Weight of aggregate retained 2.36 mm sieve after the test = W_3 g	302	304	
4	Aggregate Impact value = percent fines 100* (W2/W1) percent	22.37	22.45	22.41

*Information is furnished by the Customer/Representative.

Comments:

→ Maximum allowable Aggregate Impact value for Bituminous Concrete is 24%

Note:

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Job No.: CTCE/BBMP/MESPL/W.No.14/BC/Shape.T/2020-21

26.08.2020

TEST REPORT ON FLAKINESS INDEX & ELONGATION INDEX OF COARSE AGGREGATES

* Customer	:	**Asst. Executive Engineer,** T.Dasarahalli Sub Division, BBMP, Bangalore.
* Agency	:	**M/s. Maxp Energy Solutions Pvt.Ltd.,** #743, 80 Feet Main Road, BSK 3rd Stage, Bangalore.
* Name of Work	:	Reserve fund for Emergency works in Bagalagunte Ward No.14, BBMP, Bangalore.
* Reference	:	EE/DD/W.O/86/2020-21 Dated : 19.08.2020
* Sample ID	:	Hot mix plant, Bangalore
Test Method as per	:	IS - 2386(Part -1) : 1963 (RA-2016)
* Type of Mix	:	Bituminous Concrete
Date of Testing	:	26.08.2020
Report Issue Date	:	26.08.2020

Sl.No.	Description	Result
1	Flakiness Index	11.23%
2	Elongation Index	13.62%
3	Combined Flakiness & Elongation Index	24.85%

*Information is furnished by the Customer/Representative.

Comments:

→ Maximum allowable Flakiness & Elongation Index for Bituminous Concrete is 30%

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Job No.: CTCE/BBMP/MESPL/W.No.14/BC/Stripping/2020-21 28.08.2020

TEST REPORT ON STRIPPING VALUEOF ROAD AGGREGATES (STATIC IMMERSION TEST)

* Customer	:	**Asst. Executive Engineer,** T.Dasarahalli Sub Division, BBMP, Bangalore.
* Agency	:	**M/s. Maxp Energy Solutions Pvt. Ltd.,** #743, 80 Feet Main Road, BSK 3rd Stage, Bangalore.
* Name of Work	:	Reserve fund for Emergency works in Bagalagunte Ward No.14, BBMP, Bangalore.
* Reference	:	EE/DD/W.O/86/2020-21 Dated : 19.08.2020
Test Method as per	:	IS: 6241
* Type of Mix	:	Bituminous Concrete
Date of Testing	:	28.08.2020
Report Issue Date	:	28.08.2020

Type of binder : VG-30
Percentage of binder used : 5.00% by wt.
Total weight of aggregate : 200 g
Total weight of binder : 10.00 g
Temperature of water-bath : 40° C

Observation Number	Stripping, Percentage	Average, Percentage	Average Retained Coating, %
1	3.3	3.20	96.80
2	3.1		
3	3.2		

*Information is furnished by the Customer/Representative.

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Comments:

→ Minimum allowable Aggregate retained coating for Bituminous Concrete is 95%

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Job No.: CTCE/BBMP/MESPL/W.No.14/BC/Sp_Wa/2020-21

28.08.2020

TEST REEPORT ON SPECIFIC GRAVITY AND WATER ABSORPTION

* Customer	:	**Asst. Executive Engineer,** T.Dasarahalli Sub Division, BBMP, Bangalore.
* Agency	:	**M/s. Maxp Energy Solutions Pvt. Ltd.,** #743, 80 Feet Main Road, BSK 3rd Stage, Bangalore.
* Name of Work	:	Reserve fund for Emergency works in Bagalagunte Ward No.14, BBMP, Bangalore.
* Reference	:	EE/DD/W.O/86/2020-21 Dated : 19.08.2020
* Sample ID	:	Hot mix plant, Bangalore
Test Method as per	:	IS - 2386(Part -3) : 1963 (RA-2016)
* Type of Mix	:	Bituminous Concrete
Date of Testing	:	28.08.2020
Report Issue Date	:	28.08.2020

Sl. No.	Details	Notation	Test Number			Mean Value
			Test 1	Test 2	Test 3	
1	Weight of aggregate suspended in water with the basket	W_1 g	2012	2013	2014	
2	Weight of basket suspended in water	W_2 g	755	755	755	
3	Weight of saturated aggregate in water	$(W_1 - W_2) = W_s$ g	1257	1258	1259	
4	Weight of saturated surface dry aggregate in air	W_3 g	2011	2012	2011	
5	Weight of water equal to the volume of the aggregate	$(W_3 - W_S)$ g	754	754	752	
6	Weight of oven dried aggregate	W_4 g	2000	1998	1999	
7	Specific Gravity	$W_4/(W_3-W_S)$	2.653	2.650	2.658	2.654
8	Apparent Specific gravity	$W_4/(W_4-W_S)$	2.692	2.700	2.701	2.698
9	Water Absorption	$((W_3-W_4)*100)/W_4$	0.55%	0.70%	0.60%	0.62%

*Information is furnished by the Customer/Representative.

Comments:

→ Maximum allowable Aggregate Water absorption value for Bituminous Concrete is 2.0%

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Job No.: CTCE/BBMP/MESPL/W.No.14/BC/Bitumen/2020-21

28.08.2020

TEST REPORT ON BITUMEN CONTENT OF BITUMINOUS CONCRETE MIX

* Customer	:	**Asst. Executive Engineer,** T.Dasarahalli Sub Division, BBMP, Bangalore.
* Agency	:	**M/s. Maxp Energy Solutions Pvt. Ltd.,** #743, 80 Feet Main Road, BSK 3rd Stage, Bangalore.
* Name of Work	:	Reserve fund for Emergency works in Bagalagunte Ward No.14, BBMP, Bangalore.
* Reference	:	EE/DD/W.O/86/2020-21 Dated : 19.08.2020
* Sample ID	:	Roads in Bagalagunte, Ward No.14
Test Method as per	:	IRC:SP:11-1984
Date of Testing	:	28.08.2020
Report Issue Date	:	28.08.2020

BITUMEN CONTENT DETERMINATION

Description	Trail 1	Trail 2
1. Weight of Mixture before Test, g	500	500
2. Weight of Mixture after Test, g	473	470.5
3. Weight of Asphalt and Mineral matter Extracted, g	-	-
4. Weight of Mineral Matter, g.	-	-
5. Weight of Ash, g		
6. Weight of Bitumen Extracted, g. (corrected)	27.00	29.50
7. Bitumen content in %	5.40	5.90
8. Average	5.65	

*Information is furnished by the Customer/Representative.

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M/s. Civil-Tech Consultants & Engineers

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JAS-ANZ BSCIC ISO 9001 REGISTERED

Job No.: CTCE/BBMP/MESPL/W.No.14/BC/Bitumen/2020-21 28.08.2020

TEST REPORT ON BITUMEN CONTENT AFTER GRADATION DETERMINATION OF BITUMINOUS CONCRETE MIX

* Customer	:	**Asst. Executive Engineer,** T.Dasarahalli Sub Division, BBMP, Bangalore.
* Agency	:	**M/s. Maxp Energy Solutions Pvt. Ltd.,** #743, 80 Feet Main Road, BSK 3rd Stage, Bangalore.
* Name of Work	:	Reserve fund for Emergency works in Bagalagunte Ward No.14, BBMP, Bangalore.
* Reference	:	EE/DD/W.O/86/2020-21 Dated : 19.08.2020
* Sample ID	:	Roads in Bagalagunte, Ward No.14
Test Method as per	:	IRC:SP:11-1984
Date of Testing	:	28.08.2020
Report Issue Date	:	28.08.2020

Sieve Size in mm	Trail 1				Specified Limits as per MORTH specification table 500-18 (Grading-2)
	Weight Retained, gm	% Retained	%Cummulative Retained	% Passing	
19	0	0	0	100	100
13.2	42.25	8.93	8.93	91.07	79-100
9.5	30.15	6.37	15.31	84.69	70-88
4.75	76.62	16.20	31.51	68.49	53-71
2.36	68.25	14.43	45.93	54.07	42-58
1.18	52.22	11.04	56.97	43.03	34-48
0.6	56.65	11.98	68.95	31.05	26-38
0.3	38.25	8.09	77.04	22.96	18-28
0.15	33.62	7.11	84.15	15.85	12-20
0.075	38.59	8.16	92.30	7.70	4-10

Sieve Size in mm	Trail 2				Specified Limits as per MORTH specification table 500-18 (Grading-2)
	Weight Retained, gm	% Retained	%Cummulative Retained	% Passing	
19	0	0	0	100	100
13.2	45.25	9.62	9.62	90.38	79-100
9.5	43.22	9.19	18.80	81.20	70-88
4.75	62.25	13.23	32.03	67.97	53-71
2.36	68.28	14.51	46.55	53.45	42-58
1.18	63.32	13.46	60.00	40.00	34-48
0.6	53.33	11.33	71.34	28.66	26-38
0.3	32.26	6.86	78.20	21.80	18-28
0.15	35.62	7.57	85.77	14.23	12-20
0.075	40.15	8.53	94.30	5.70	4-10

*Information is furnished by the Customer/Representative.

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Building & Highway Material Testing Laboratory

An ISO 9001:2015 Certified Company

NABL - Accredited Laboratory as per ISO / IEC-17025 : 2017

Job No.: CTCE/BBMP/MESPL/W.No.14/BC/Agg/2020-21

28.08.2020

TEST REPORT ON GRADATION OF AGGREGATE

* Customer	:	**Asst. Executive Engineer,** T.Dasarahalli Sub Division, BBMP, Bangalore.
* Agency	:	**M/s. Maxp Energy Solutions Pvt. Ltd.,** #743, 80 Feet Main Road, BSK 3rd Stage, Bangalore.
* Name of Work	:	Reserve fund for Emergency works in Bagalagunte Ward No.14, BBMP,
* Reference	:	EE/DD/W.O/86/2020-21 Dated : 19.08.2020
* Sample ID	:	Bituminous Concrete
Test Method as per	:	IS - 2386(Part -1) : 1963 (RA-2016)
* Type of Mix	:	Hot mix plant, Bangalore
Date of Testing	:	28.08.2020
Report Issue Date	:	28.08.2020

Total Weight of Sample: **5150** gm

Sieve Size, mm	Weight Retained, gm	% Retained	Cummulative % Retained	% Passing	JOBMIX Gradation as per MORTH	Remarks
19	0	0	0	100	100	Gradation satisfies Bituminous concrete Grade-II specification as per `MORTH 500-18
13.2	680	13.20	13.20	86.80	79 - 100	
9.5	580	11.26	24.47	75.53	70 - 88	
4.75	515	10.00	34.47	65.53	53 - 71	
2.36	680	13.20	47.67	52.33	42 - 58	
1.18	630	12.23	59.90	40.10	34 - 48	
0.600	545	10.58	70.49	29.51	26 - 38	
0.300	425	8.25	78.74	21.26	18 - 28	
0.150	325	6.31	85.05	14.95	12 - 20	
0.075	430	8.35	93.40	6.60	4 - 10	

Total Weight of Sample: **5250** gm

Sieve Size, mm	Weight Retained, gm	% Retained	Cummulative % Retained	% Passing	JOBMIX Gradation as per MORTH	Remarks
19	0	0	0	100	100	Gradation satisfies Bituminous concrete Grade-II specification as per MORTH 500-18
13.2	525	10.00	10.00	90.00	79 - 100	
9.5	595	11.33	21.33	78.67	70 - 88	
4.75	625	11.90	33.24	66.76	53 - 71	
2.36	590	11.24	44.48	55.52	42 - 58	
1.18	690	13.14	57.62	42.38	34 - 48	
0.600	515	9.81	67.43	32.57	26 - 38	
0.300	530	10.10	77.52	22.48	18 - 28	
0.150	325	6.19	83.71	16.29	12 - 20	
0.075	495	9.43	93.14	6.86	4 - 10	

*Information is furnished by the Customer/Representative.

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Job No.: CTCE/BBMP/MESPL/W.No.14/BC/Stability/2020-21

28.08.2020

TEST REPORT ON MARSHALL STABILITY OF MIX

*** Customer**	:	**Asst. Executive Engineer,** T.Dasarahalli Sub Division, BBMP, Bangalore.
*** Agency**	:	**M/s. Maxp Energy Solutions Pvt. Ltd.,** #743, 80 Feet Main Road, BSK 3rd Stage, Bangalore.
***Name of the Work**	:	Reserve fund for Emergency works in Bagalagunte Ward No.14, BBMP, Bangalore.
***Reference**	:	EE/DD/W.O/86/2020-21 Dated : 19.08.2020
*** Source**	:	Hot mix Plant, Bangalore
*** Type of Mix**	:	Bituminous Concrete
Date of Testing	:	28.08.2020
Report Issue Date	:	28.08.2020

The results of the tests conducted on the Bituminous Concrete mix sample are as follows:

Sl. No	Description	Test Result 1	Test Result 2	Requirement as per MORTH (Table 500-19)
1	Marshall Stability (Kn at 60°C)	9.95	10.85	9 Kn (min)
2	Marshall flow (mm)	2.90	3.50	2 – 4
3	Voids in Compacted Mix %	4.25	5.65	3 – 6
4	Percent voids in Mineral Aggregate (VMA)	13.85	14.20	13 - 15
5	Percent Voids filled with Bitumen (VFB)	66.95	68.20	65 - 75
6	Density, g/cc	2.27	2.28	--

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ಟಿ. ದಾಸರಹಳ್ಳಿ ಉಪ ವಿಭಾಗ
ಬಾಗಲಗುಂಟೆ. ಜಿ.ಜಿ.ಎಂ.ಪಿ.
ಬೆಂಗಳೂರು-560073.

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